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CONTENT

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COURSE XXXIII cycle - 1st year

TOPIC BIM for data management for new concept of stadium: collaboration, interoperability and data visualization

TUTOR(S) Anna OSELLO, Fabio MANZONE

ACADEMIC CONTEXT

Osello A., Ugliotti F.M., 2017. *BIM verso il catasto del futuro – Conoscere, Digitalizzare, Condividere – Il caso studio della città di Torino*. Roma: Gangemi.

AEC (UK) BIM Technology Protocol – Practical implementation of BIM for the UK Architectural, Engineering and Construction (AEC) industry. Version 2.1.1. 2015.

Osello A., Erba D., Semeraro F., Ugliotti F.M., 2015. *Perché quando e come utilizzare il BIM per il FM in Italia*. Systema.

EXTERNAL COLLABORATIONS

- JUVENTUS F.C. S.p.A., Facility and Maintenance department

HIGHLIGHTS OF THE RESEARCH ACTIVITY

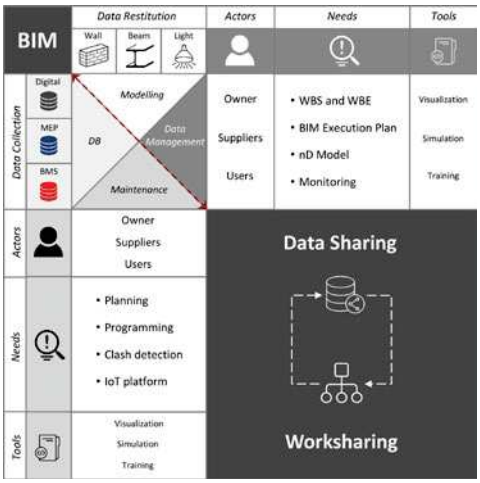
The research topic focus on the potentialities provided by the Building Information Modelling (BIM) methodology, applied to a complex building that evolves constantly like the Allianz Stadium. This goal can be achieved through the research and the development of guidelines for the use of BIM models during the operational step of building lifecycle, to reduce waste of time and costs. These aspects will be closely linked to the Virtual Reality (VR) and Augmented Reality (AR) activities that will be employed to achieve the owner's maintenance needs. The achievement of these objectives will lead to the full development of the integrated building management concept during its lifecycle, allowing it to constantly update, overcoming the actual methodology not based on an integrated alphanumeric model.

So, the main general keywords of the research topic will be:

- Collaboration, based on Data Sharing and Worksharing between all the actors involved in the process. The application of the BIM methodology is illustrated in the matrix below, based on Data Collection, Data Restitution, Data Management and Maintenance.
- Interoperability, related to the employment of the BIM model with a Facility and Maintenance (FM) software. For this purpose, is important to define the project structure and the project BIM workflow, strictly related to maintenance aims for which the project is developed, and interoperability tests, through the definition of specific guidelines.
- Data Visualization, based on Augmented Reality (AR) and Virtual Reality (VR) tools that will be useful for the improvement of maintenance activities performance and for a new concept of stadium.

Starting from these concepts and from the consultation of international literature, the main activity of the first year has been the definition of the project structure, represented by three main areas: (i) legislation, (ii) data management and (iii) work environment. The project workflow has been structured in four different steps: (i) Input, represented by project files, survey activities and family project, (ii) the definition of the Level of Detail/Development (LOD) for each BIM object, (iii) the project BIM workflow: federated model and (iv) Output, in terms of Project DB, Maintenance Visualization and interoperability with the FM software.

Future research activities will be focused on the management of suppliers' activity related to the creation of BIM models, based on the specific elaborated guidelines for this case study and on the completion of interoperability tests. Completed the creation of the geometric and alphanumeric Data Base (DB), the research activity will deal with the employment of AR and VR tools for virtual tour, FM visualization and Internet of Things (IoT).



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